

L 9587-66

ACC NR: AP6000544

A special form of the nonanalytic Lyapunov function satisfying the theorems on asymptotic stability is constructed and the stability of the simplified system is analyzed on the basis of the general theory of stability and the special methods for constructing the regulators. Conditions under which the construction of regulators ensuring the asymptotic stability of such nonlinear control systems is possible and when it is impossible are established. An example illustrating the theory is presented. Orig. art. has: 65 formulas. [IK]

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SOV/137-58-9-20021 D

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 275 (USSR)

AUTHOR: Gal'perin, Ye.A.

TITLE: Changes in the Crystal Structure of Steel Under Cold and Hot Working (Izmeneniye kristallicheskoy struktury stali pri kholodnoy i termicheskoy obrabotkakh)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Candidate of Physical-Mathematical Sciences, presented to the Leningrad. gos. ped. in-ta im. A.I. Gertsena (Leningrad State Pedagogical Institute im. A.I. Gertsen), Leningrad, 1958

ASSOCIATION: Leningrad. gos. ped. in-ta im. A.I. Gertsena (Leningrad State Pedagogical Institute im. A.I. Gertsen), Leningrad
1. Steel--Crystal structure 2. Steel--Deformation 3. Crystal structure--Temperature factors

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GAL'PERIN, Ye.A. (Moskva)

Stabilization of the steady-state motion of a nonlinear controllable system in the critical case of a pair of purely imaginary roots.

Prikl. mat. i mekh. 29 no.6:1070-1080 N-D '65.

(MIRA 19:2)

1. Submitted November 6, 1965.

BALZHI, M.F.; BEREZKIN, P.N.; GOL'DSHTEYN, Ya.Ye.; GAL'PERIN, Ye.B.;
YEDLICHKO, V.V.; KERAS, A.F.; LEKUS, I.D.; POTEKUSHIN, N.V.;
POZDNYSHV, V.M.; SUBBOTIN, N.A.; SAVINTSEV, R.I.; TAMAROVSKIY,
V.M.; SHEREMET'YEV, A.D.; BAKSHI, O.A., kand. tekhn. nauk,
retsenzent; BONDIN, Ye.A., inzh., retsenzent; BOYKO, F.I., inzh.,
retsenzent; VASIN, Yu.P., inzh., retsenzent; LAZAREV, A.A., inzh.,
retsenzent; SOROKIN, A.I., inzh., retsenzent; KON'KOV, Arkadiy
Sergeyevich, dots., red.; DUGINA, N.A., tekhn. red.

[Economy of metals in the machinery industry] Ekonomiya metallov
v mashinostroyeni. [By] M.F. Balzhi i dr. Moskva, Mashgiz, 1962.

235 p.

(MIRA 16:2)

(Machinery--Design and construction)
(Metals, Substitutes for)

USSR/Geophysics - Seismic correlation method

PD 334

Card 1/1

Author : Gamburtsev, G. A., and Gal'perin, Ye. I.

Title : Procedures followed in operations conducted in accordance with the correlation method for the study of earthquakes

Periodical : Izv. AN SSSR, Ser. geofiz. 1, 3-10, Jan/Feb 1954

Abstract : Describe two modifications of the correlation method for studying earthquakes (KMIZ) in application to the problem of investigating the territorial distribution governing the foci of local, very weak, high-frequency seismic shocks. Consider the problems concerning apparatus, procedures of field observations and interpretation of their results. Refer to their previous reports appearing in Doklady Akademii Nauk SSR, 1952-1953.

Institution : Geophysics Institute, Academy of Sciences, USSR

Submitted : August 20, 1953

FD 352

USSR/Geophysics - Seismic observations

Card 1/1

Author : Gamburtsev, G. A., and Gal'perin, Ye. I.

Title : Azimuthal seismic observations with inclined seismographs

Periodical : Izv. AN SSSR, Ser. geofiz. 2, 184-189, Mar/Apr 1954

Abstract : Describe a procedure for observing earthquakes by means of an azimuthal set-up with inclined seismographs. Demonstrate the superiority of set-ups of this type in comparison with azimuthal set-ups with horizontal and one vertical seismographs. Present examples of the recording and determination of the direction of the displacement vector of soil for local earthquakes in the region of Pamir in 1953. Two references, both in Doklady Akademii Nauk SSSR, 1953-1954, by G. A. Gamburtsev.

Institution : Geophysics Institute, Acad Sci USSR

Submitted : January 7, 1954

Gal'perin, Ye. I.

60-29-1/14

AUTHORS: Zapol'skiy, K.I., Gal'perin, Ye.I., Borisevich, Ye. S.
TITLE: Mobile Experimental Low-frequency Seismic Stations
(Opytnaya peredvizhnaya nizkochastotnaya seysmicheskaya
stantsiya)
PERIODICAL: Trudy Geofizicheskogo instituta AN SSSR, 1955, Nr 29,
pp. 3-10 (USSR)

ABSTRACT: The authors describe apparatus developed to investigate multichannel registration of near earthquakes in the frequency range of 1-25 cps. The station consists of a low-frequency, 12-channel seismic unit "O/HC" mounted on a "TAZ-51" truck. Each channel consists of a seismograph, an amplifier and a galvanometer. The general characteristics of the filter-amplifier systems and auxiliary measuring and registering instruments are described in detail. Field experiments conducted in 1950 in the area of northern Tien Shan demonstrated the effectiveness of these stations. The station may also be used to register exploratory explosions. There are 7 figures and 4 references of which 3 are USSR and 1 English.

AVAILABLE: Library of Congress

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GALPERIN, Y. I., MIRONOV, A. V. and SHEFOV, N. N.

"Spectographs for the Study of Atmospheric Emission During the I.G.Y. of 1957-1958," paper read at the 7th International Astrophysical Colloquium, Liege, 12-14 Jul 1956.

A short description of spectographs of large focal ratios for studies of the night sky and aurorae is given.

SO: 568946

GAL'PERIN, Ye.I.

Solution of forward space problems of a geometric seismic wave for multistrata media with arbitrary demarcation boundaries. Izv.AN SSSR.Ser.geofiz. no.4:391-403 Ap '56. (MLRA 9:8)

1. Akademiya nauk SSSR, Geofizicheskiy institut.
(Seismology)

GAL'PERIN, Ye.I.

Azimuthal declination of seismic rays. Izv. AN SSSR. Ser. geofiz.
no. 11: 1282-1293 N '56. (MIRA 10:1)

1. Akademiya nauk SSSR Geofizicheskiy institut.
(Seismic waves)

CALITERIN, Ye. I., GORYACHEV, A. V. and ZVEREV, S. M.

"Crustal Structure Researches in the Transition Region from the Asiatic Continent to the Pacific." (Sub-title - "The Pacific Geologo-Geophysical Expedition.")

USSR Academy of Sciences, 1957; XII Seismology, No. 1, 31 pp. (Russian)
Special Committee for the International Geophysical Year.

GAL'PERIN, Y. I.

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AUTHOR: Akseovich, G. I., Gal'perin, Y. I., Zayonchkovskiy, M.A.

TITLE: Special features of an apparatus for deep seismic probing and results obtained in testing it. (Osobennosti apparatury dlya glubinnogo seysmicheskogo zondirovaniya i rezul'taty ee oprobovaniya).

PERIODICAL: Izvestiya Akademii Nauk, Seriya Geofizicheskaya, 1957, No.2, pp. 184-189. (U.S.S.R.)

ABSTRACT: Apparatus is described for recording seismic waves produced by relatively small explosions, using 50 - 300 kg explosives, at distances of up to 400 km from the explosion point. This apparatus is based primarily on work carried out in Northern Tyan'-Shan' in 1949 and 1950 by the authors and other members of the Geophysics Institute of the Ac.Sc. Information on the experimental apparatus has been published previously (10). It was found that the predominant spectrum of the frequencies of seismic waves at distances of 150 to 300 km changes little and the predominant frequencies vary between 8 and 15 c.p.s.

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TITLE: Special features of an apparatus for deep seismic probing and results obtained in testing it. (Osobennosti apparatury dlya glubinnogo seysmicheskogo zondirovaniya i rezul'taty ee oprobovaniya).

The individual components of the apparatus are briefly described, namely, the seismographs, the amplifiers and the time marking circuit. A few seismograms obtained at various locations (Tyan'-Shan', Bashkiriya, Turkmenia, Pamir) are given

The text includes 2 graphs, 1 diagram and 4 sets of seismograms. There are 18 references, of which 17 are Slavic.

ASSOCIATION: The Academy of Sciences of the USSR, Institute of Terrestrial Physics (Akademiya Nauk SSSR, Institut fiziki zemli).

PRESENTED BY:

SUBMITTED: 5/23/56

AVAILABLE: Library of Congress

Card 2/2

VEYTSMAN, P.S.; GAL'PERIN, Ye.I.

Studies on the structure of the Earth's crust on the territory
between the Asiatic continent and the Pacific Ocean. Makhdunar.
geofiz. god no.3:76-82 '57. (MIRA 11:5)
(Sakhalin region--Earth--Surface)
(Kurile Islands--Earth--Surface)

Gal'perin, Ye. I.

AUTHOR: Gal'perin, Ye. I.

49-9-1/13

TITLE: Grouping of the first type and method of obtaining multi-component azimuth seismograms. (Gruppirovaniye pervogo roda i sposob polucheniya mnogokomponentnykh azimuthal'nykh seysmogramm).

PERIODICAL: Ivestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1957, No.9, pp.1081-1098 + 3 plates. (USSR)

ABSTRACT: The object of this paper is to describe a method of grouping of the first type based on changing the directional diagram of the first type, i.e. on the displacement of a particle at a given point during passage through it of a wave. Such grouping is referred to as point or azimuthal grouping and in such grouping the signals are summed of seismographs located in one point but orientated in different directions in space. Whilst grouping of the second type is linked with the direction of the approach of the wave, grouping of the first type is linked with the direction of the displacement of the particle. Fundamental equations in grouping are the equations determining the directional diagram of the group, which in turn is determined by the shape and direction in space of the axis of maximum sensitivity and by the amplitude. A method of grouping of

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Grouping of the first type and method of obtaining multi-component azimuth seismograms. ^{49-9-1/13}

the first type (azimuthal grouping) is proposed which permits changing the direction of the axis and the sensitivity of the directional diagram of the group. Equations are derived of azimuthal grouping and a method has been worked out for obtaining multi-component azimuth seismograms by means of small component (3 to 4) azimuth equipment. A brief description is given of the apparatus (polarisation seismic analyser) and azimuthal seismograms are derived which were obtained by the proposed method. In para.1 the direction of the axis of the directional diagram of the group is considered as a two-dimensional and as a three-dimensional problem, investigating methods of changing the direction of the axis of the total directional diagram. With changing of the direction of the axis there will also be a change in the amplitude of the diagram which is determined by the sensitivity of the reference seismograph. Para.2 deals with the problem of the amplitudes of the directional diagrams of groups. In para.3 some particular cases are studied which are used for analysing the derived equations, namely, the following: four-component conical set-up with a 45° inclination angle to the horizontal of the seismographs; three-component

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Grouping of the first type and method of obtaining multi-component azimuth seismograms.

set-up of seismographs xyz; three-component symmetrical arrangement of inclined seismographs; example of comparison of multi-component azimuthal seismographs by the method of azimuthal grouping. Para. 4 deals with the possible applications of azimuthal groupings; in para. 5 a brief description is given of the apparatus used for azimuthal grouping showing the block schematics of the polarised seismic analyser (Fig.11); Fig.14 shows a comparison of twelve-component real azimuthal seismograms (channels 1-12) and of reference seismograms (channels 13-24), whereby the angle of inclination of these seismograms is 45° . It was found that in grouping of the first type, azimuthal grouping, the diagram of the direction of the group coincides in shape with the diagram of the direction of each seismograph included in the group and can differ from the latter only in orientation and amplitude. The azimuthal grouping permits increasing the effective sensitivity of the apparatus and it also permits obtaining multi-component azimuthal seismograms corresponding to an arbitrary distribution of the reference seismographs in the set-up. In addition to

Card 3/4 purely theoretical interest, these properties can be

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utilised in seismology and seismic prospecting. In seismology azimuthal grouping can be applied for qualitative determination of the direction of displacement of longitudinal waves and also for studying the parameters of polarisation of micro-seismic waves for the purpose of elucidating the relations between the direction of displacement of the particles and the direction of propagation of the waves. In seismic prospecting the azimuthal grouping permits combination of positional and azimuthal correlation of waves on the seismograms and a more detailed study of the wave chart, particularly for sections having complicated geological structures. Acknowledgments are made to A. V. Frolova for carrying out the basic calculations. There are 16 figures and 13 references, all of which are Slavic.

SUBMITTED: November 2, 1956.

ASSOCIATION: Ac.Sc. U.S.S.R. Institute of Physics of the Earth.
(Akademiya Nauk SSSR Institut Fiziki Zemli)

AVAILABLE: Library of Congress

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GAL'PERIN, Ye. I.

GAL'PERIN, Ye. I.

Method for processing observations on three-dimensional sounding.
Prikl. geofiz. no.17:67-75 '57. (MIRA 11:2)
(Prospecting--Geophysical methods)
(Seismic waves)

GAL'PERIN, Ye.I., GORYACHEV, A.V., ZVEREV, S.M.; FEDINSKII, V.V., doktor. . .
fiziko-matematicheskikh nauk, otv. red.; SILKIN, B.I., red., izd-va.;
RYLINA, Yu.V., tekhn. red.

[Studies on the structure of the Earth's crust in the transition
region from the Asiatic continent to the Pacific; work of the
Pacific geological and geophysical expedition of the Academy of
Sciences of the U.S.S.R.] Issledovanie zemnoi kory v oblasti
perekhoda ot Aziatskogo kontinenta k Tikhomu okeanu; raboty
Tikhookeanskoi kompleksnoi geologo-geofizicheskoi ekspeditsii AN
SSSR v 1957 g. Moskva, Izd-vo Akad. nauk SSSR. No. 1. [Twelfth
section of the International Geophysical Year program (seismology)]
XII razdel programy MGG (seismologiya) 1958. 25 p. (MIRA 11:10)
(International Geophysical Year, 1957-1958)
(Seismology--Observations)
(Soviet Far East--Geology)

TABLE I BOOK REPRODUCTIONS

NOV/5276

Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki.
Peklenovskaya geofizika; sbornik statey, vyp. 13 (Applied Geophysics; Collection of
Articles, No. 13) Moscow, Oostroyshchik, 1958, 286 p.
Karta aliq inserted. 3,000 copies printed.

M.: A.I. Bogdanov; Executive Ed.: N.P. Dobrynina; Tech. Ed.: E.A. Mikhlin.

REMARKS: The book is intended for engineers, technicians, geophysicists, and
persons interested in the geophysical methods of petroleum prospecting.

COMMENT: The book is a collection of 15 articles dealing with the theoretical
and practical problems of electrical sounding, magnetic induction, and the
application of these methods in geophysics. The articles are written by
leading experts in the field and are of high scientific and practical value.
The book is intended for the first time in Soviet literature. New methods for the
investigation and detection of radioactive emissions of drill holes, as well as
optical and luminescence logging are analyzed. No personalities are mentioned.
References accompany most of the articles.

Belovitskiy, Ye. I., O.A. Krasitskiy, I.I. Mikhov, and A.V. Prilom.
The Application of the Method of Geoelectrical Projections
for the Solution of Special Problems in Geoelectricity

Belovitskiy, Ye. I. Intensity of Reflected and Refracted Longitudinal
Waves at Angles of Incidence Less Than Critical

Belovitskiy, Ye. I. and Z.I. Zakharenko. Some Problems of the Theory
and Design of the Output Stage of a Seismic Amplifier and Galvanometer

Belovitskiy, Ye. I. Theoretical Principles of Electrical Sounding With an
Intermittent Current in Water

Alkhayev, A.M., I.I. Belovitskiy, and A.V. Mikhov. Application
of New Methods of Electrical Prospecting in Siberia

Belovitskiy, Ye. I. Methods of Curvilinear Electrical Soundings

Belovitskiy, Ye. I. Application of the Loop (Square) Method for the
Exploration of Buried Structures

Belovitskiy, Ye. I. Method of Integral Transformations in the Geological
Interpretation of Geoelectrical Anomalies

Belovitskiy, Ye. I. Basic Characteristics of a Geological Cross Section
of the Magnetic and Gravitational Fields of the Western Part of the Western
Siberian Basin

Belovitskiy, Ye. I. Some Relations Between Errors in Orientation
Observations of a New Network in the Case of a Linear Change of the
Magnetic Field

Belovitskiy, Ye. I. Instrument for Controlling the Distribution of
Current Around a Coaxial Cable

Belovitskiy, Ye. I. Some Problems in the Logging
of Buried Structures

Belovitskiy, Ye. I. Optical Methods for Investigation of Buried
Structures

Belovitskiy, Ye. I. Method for Detecting Radioactive Emissions of
Very Small Intensity

Belovitskiy, Ye. I. Relationship Between the Observation Control
Intensity and the Area Interval of Geophysical Maps

REMARKS: Library of Congress (98559.17)

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21/08/00
0-15-60

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GAL'PERIN, Ye. I.

The following papers were read at the Meeting of the European Seismological Commission in Utrecht, Holland, 8-12 April 1958:

GAL'PERIN, Ye. I. and KOSMINSKAYA, I. P. (Moscow)
"Seismic Investigations of the Deep Crustal Structure According to the IGY Plan."

SAVARENSKIY, Ye. F. (Moscow)
"Determination of Earthquake Magnitude and Intensity in the USSR."

RIZNICHENKO, I. V. (Moscow)
"Quantitative Determination and Mapping of Seismic Activity."

KEYLIS-BOROK, V. I. (Moscow)
"Estimation of Displacement in an Earthquake Source and of Source Dimensions."

KARIN, Ye. V. (Moscow)
"Absorption of Stationary Elastic Vibrations in Rocks."

(five of above authors attended the Conference)

SO: Seismologia, July 1958, Ussr.

GALDENIS, E. I., F. N. YAKOV, A. V., F. N. YAKOV, A. V.,
SOLOVIEV, D. M.

"Complex Geologica and D. M. Soloviev on Complex Geologica
Geophysical Investigations of the Crustal Structure in the
Zone of Transition Between the Asiatic Continent and the
Pacific Ocean."

Paper Presented at CSAGI Meeting, 30 Jul - 9 Aug 58, Moscow
Available in Library

DR. A. I. LITVIN, L. S., TAYANOV, L. A., L. S.,
KOSITSKY, L. P., LITVIN, L. S.

"Deep Seismic Sounding in the Zone of Transition Between the Asiatic
Continent and the Pacific Ocean."

Paper Presented at USAGI Meeting, 30 Jul - 9 Aug 58, Moscow
Available in Library

GAL'PERIN, Ye.I.

~~Studying the structure of the earth's crust in the zone of transition from the Asiatic continent to the Pacific Ocean. Mezhdunar. geofiz. god no.5:66-73 '58.~~ (MIRA 11:10)
(Soviet Far East--Easth--Surface)

SOV/49-58-7-3/16

AUTHORS: Gal'perin, Ye.I. and Kosminskaya, I.P.

TITLE: Methods of Seismic Depth Soundings at Sea (Osobennosti metodiki glubinnogo seysmicheskogo zondirovaniya na more)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 7, pp 833 - 847 (USSR)

ABSTRACT: The best results in determining the composition of the Earth's crust were obtained in the USA by employing a method of the seismic-depth sounding (S.D.S.) with the mobile points of detonation and the stationary registration stations. This method is one of the many which generally can be classified as follows:
The Method of a Stationary Point of Detonation is used in the majority of seismic surveys on land and sea. Several kinds of this method can be distinguished:
A) Continuous Profile Method - is the most common, also used in S.D.S. (Figure 1, I-A). This method offers the following advantages: 1) the differentiation of a single wave. 2) Determination of the wave travel time.
3) Determination of the wave relative velocity.
4) Continuous recording along the line of observation.
5) Construction of a continuous odograph.

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B) Partly Continuous Profile Method (Figure 1, I-B) is employed mostly over large territories, mountains, etc. The seismic survey is based on the separate tracks with distances between them much larger than the wavelength. This method gives only the first three of the advantages listed above.

C) Pointed Registration (Figure 1, I-C) gives the time of wave travel only by offering the second and third of the above advantages. This method is employed with the strong detonations.

A quite different method is obtained when the mobile detonation points and the stationary registration stations are applied. This method can be divided into two main classes, depending whether one or more points of registration are used:

1) One Point of Registration.

a) Continuous shooting (Figure 1, II-1-A) can be employed together with the continuous profile method. This method is not largely used due to the difficulties of obtaining the detonations frequently enough.

Card2/10 b) Partly Continuous Shooting (Figure 1, II-1-B) gives

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the first three advantages listed above with the possibility of obtaining a partial wave odograph. It can be employed in place of the continuous profile method. However, this method is not much in use owing to many technical difficulties.

c) Pointed Shooting (Figure 1, II-1-C) has only the first advantage, i.e. it gives the total travel time of one wave.

2) Multi-point Registration.

This method can be used effectively when there is a sufficient frequency of the point-to-point registrations - then the third advantage could be obtained.

Figure 1 shows the above systems grouped as follows: the top row - stationary point of detonation. The middle and lower rows - mobile points of detonation. The left column gives the most efficient methods: the continuous profile and continuous shooting - the right column - the least efficient methods: the pointed profile and pointed shooting. The middle column represents the intermediate methods: the partly continuous profile and partly continuous shooting. When the detonation and registration points are situated on land, the best methods employed are I-A,B. When the both points are at sea, the methods II-1 and II-2 are the

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best (especially II-1-C). The method II-2-C is the best for the work carried out partly on land, partly at sea. Two methods (II-1-C and (II-2-C) were applied in the S.D.S. of the Caspian Sea in 1956 described below.

Methods of Observations - usually a greater area can be covered by the mobile detonations method at sea. This, coupled with the better odographs, better interpretation of the longitudinal and other profiles and the possibility of carrying the survey with fewer points of detonation (Figure 2), decided in employing this method for S.D.S. of the Caspian Sea. Several other points were observed: the length of profiles (the length of odographs) was taken in relation to the depth of the sounding datum, which was deeper on land (30 - 40 km) and shallower (10-15 km) at sea. The distance from detonation to registration points was kept at 250-300 km on land and 80-100 km at sea. Distance between the points of detonation and the observation ships was chosen to allow a group correlation between waves. This distance was changed along the line of profile. The distances between the observation ships were determined by

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the type of odographs in use - usually 50-100 km. Figure 3 shows one of the odographs prepared for a profile of the Caspian Sea.

Observations at the detonation point - Experience showed that the registrations of the soundwaves received from the detonations were very useful for the determination of the various data of sounding, thus helping to separate the fields of the secondary shocks.

Determination of places for ships and detonation points was carried out by means of the radiogeodesic methods if the distance from the shore was not great, otherwise the velocity of sound in water was applied with special investigation of hydrological conditions of the sea (temperature and saltiness).

In the intermediate regions between the land and deep sea, the length of each profile was 3-5 km.

The apparatus used. For the registration of the seismic waves at sea, the hydrophones with the amplifier placed next to the piezo-unit were used. For the secondary intensification, the usual low-frequency amplifier was employed.

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A multi-channel registration was applied for the pointed

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method of observation (Figure 4).

Interpretation of Sea Observations.

Interpretation of seismic observations was carried out in two stages: the analysis of seismograms together with production of wave odographs and the reading of odographs (determination of seismic velocities, plotting maps, etc.), the character of work and the data collected by the mobile method of detonation is given below.

Types of wave correlation: The analysis of the seismograms was based on selecting and detecting of the main seismic oscillations. A special feature of the depth-sounding at sea was an application of the group wave correlation, i.e. working with a whole group of waves instead of a single wave. This method proved to be much superior in the investigation of the crustal thickness.

Detecting of the Main Wave on Multi-channel Positioning Seismogram.

One of the more important methods of detecting the wave on the seismogram was the determination of apparent velocities. The main wave or a group of waves on the printed seismograms

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was characterised by the quasi-sinusoidal shape of its tracing and could be distinguished by its amplitude (Figure 5). The group of waves was distinguished by both the absolute time of travel and the intensity. Correlation of the Wave Groups on the Joint Seismograms Due to the distances between detonation points at sea being greater than the length of waves, the correlation of phases usually was not practical. However, it was possible to obtain a group correlation by observing the following points:

a) Pointed Recordings. To select a group of waves from a series of pointed recordings, a method of absolute time was applied. The travel times of the first waves of a group were plotted along the straight line on the odograph for the longitudinal profile or, along the hyperbolic curve on the transverse odographs.

A similar shape of the wave group had an equal period of oscillations; the same length of the group had an equal number of the separate waves of similar intensity. The intensity of each composite wave gradually decreased with an increase of distance.

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A particular difficulty of the pointed method of registration was the separation and detection of waves on some recordings. In this case, a shape of the recording and the intensity were considered.

Figures 6 and 7 represent the pointed seismograms obtained on the transverse (Figure 6) and longitudinal (Figure 7) profiles. Figures 3 and 8 show the group odographs constructed from the pointed seismograms.

b) Multi-pointed recordings. For detecting the wave groups and separating them from a series of multi-pointed recordings, the equal apparent velocities and a similar shape were considered. The straight line odograph was obtained from the longitudinal profile, while the hyperbolic odograph was obtained from the transverse profile. The apparent velocities from the separate seismograms were related to the apparent velocities of the wave front spreading along the sounding datum.

Change of Wave Group.

The best correlation usually was obtained of the first waves recorded. However, there were cases when the first

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waves were changed, i.e. at the intersection of odographs when the gradient changed or in the case of the fading wave. The latter case was due to the changes in the boundary of the sedimentations (Figure 9, group t_2) or to the variations in the core structure (Figure 9, groups t_3 and t_4).

Construction of Seismic Cross-section

The other interpretations of the S.D.S. odographs did not differ much from the usual methods employed in the seismic survey. The problem of selecting of the medium and stratified velocities was of special importance. More experiments are needed in this matter but it can be said that the graphs showing the ratio of the medium velocity v to the depth H and the vertical odograph $t(H)$ could be employed with advantage.

It should be noted that the method of mobile detonations was very productive, allowing the analysis of seismograms

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to be carried out during the periods of observation. This involved an advance planning and the corrections made on the spot for each profile, thus improving greatly the final results.

There are 9 figures and 15 references, 13 of which are Soviet and 2 English.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli
(Institute of Terrestrial Physics of the AS USSR)

SUBMITTED: August 20, 1957

Card 10/10

1. Seismic waves--Applications
2. Seismological stations--Applications
3. Seismic waves--Recording devices
4. Earth--Wave transmission

GAL'PERIN, Ye.I.; KRASIL'SHCHIKOVA, G.A.; MIRONOVA, V.I.; FROLOVA, A.V.

Techniques in using stereographic projections for solving three-dimensional problems in geometrical seismology. Prikl. geofiz. no.18: 3-29 '58. (MIRA 11:5)

(Seismometry) (Projection)

AKSENOVICH, G.I.; GAL'PERIN, Ye.I.; ZAYONCHKOVSKIY, M.A.; KULIKOV, S.A.

Recording the moment of explosion in deep seismic prospecting.
Razved. i prom.geofiz. no.23:21-30 '58. (MIRA 11:12)
(Prospecting--Geophysical methods)

3(6)

AUTHORS: Gagel'gants, A. A., Gal'perin, Ye. I., S07/20-123-7-39/54
Kosminskaya, I. P., Krakshin, R. M.

TITLE: The Structure of the Earth's Crust in the Central Part of the
Caspian Sea as Determined by Deep Seismic Sounding (Struktura
zemnoy kory tsentral'noy chasti Kaspiyskogo morya po dannym
glubinnogo seysmicheskogo zondirovaniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 3, pp 520-522
(USSR)

ABSTRACT: Under the International Geophysical Year program, the Institute
fiziki zemli AN SSSR (Institute of Physics of the Earth, AS
USSR) in cooperation with the Vsesoyuznyy nauchno-
issledovatel'skiy institut geofiziki (All Union Scientific
Research Institute of Geophysics), the Azerbaydzhanskiy nauchno-
issledovatel'skiy institut po dolyche nefi (Azerbaijani
Scientific Research Institute of Petroleum Induction) as well
as the Institut okeanologii AN SSSR (Oceanography Institute
AS USSR) devised test apparatuses and methods of deep crustal
seismic probing (SNP) from a boat (Refs 1-3). At the same time
the subsurface structure of the Caspian Sea area was

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The Structure of the Earth's Crust in the General Part of the Caspian Sea as Determined by Deep Seismic Sounding

investigated. The peculiarities of deep-crust seismic picking from a snip have already been described (see 4). The subsurface structure of the crust in the area in question is interesting from both the geologic and the geophysical standpoint. Major structural entities with different geologic histories meet in this region: the Epikavkazian table of Turkmeniya meets the folded belt of the Caucasus. The determination of the structure of the junction is important to the prospects of oil exploration. Figure 1 shows subsurface contours drawn on the principal separation planes between the structures; the depth limits are rather complex. An analysis of cross-sections and maps has indicated a scheme of the crust formation (Fig 2). The epikavkazian table is composed of 3 layers: a) a thin sedimentary layer (1-3 km thick) with a seismic velocity of approximately 3 km/sec, b) a 10-15 km thick granite layer and c) a basalt layer of some 20-25 km thickness. The crust in the area of the table is about 30-35 km thick. In the contact area between table and folded belt the sedimentary layer thickens rapidly while the granite layer thins. In the actual folded-belt region the crust (here 40-45 km thick) contains only 2 layers:

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4.
The Structure of the Earth's Crust in the Central SOV/20-123-3-12/54
Part of the Caspian Sea as Determined by Deep Seismic Sounding

the sedimentary (more than 20 km thick) and the basalt. The great thickness of the sedimentary layer and the thin overlying granite layer may be characteristic of certain zones of alpine folding which have in the past undergone intense folding and even now are undergoing folding. There are 2 figures and 4 Soviet references.

PRESENTED: June 26, 1958, by N. S. Shatskiy, Academician

SUBMITTED: June 9, 1958

Card 3/3

S/169/61/000/012/001/089
D228/D305

AUTHOR: Veytsman, P. S., Gal'perin, Ye. I., Zverev,
S. M., Kosninskaya, I. P., and Krakshina, R. M.

TITLE: Some data on the structure of the crust in the
transitional zone from the Asiatic Continent to
the Pacific Ocean

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 12, 1961,
5, abstract 12A34 (V sb. Geol. rezultaty prikl.
geokhimii i geofiz. Razdel 2. M., Gosgeol-
tekhizdat, 1960, 37-42)

TEXT: Complex geophysical research was carried out on the
structure of the crust in the transitional zone from the Asiatic
Continent to the Pacific Ocean. The complex of methods included
seismic surveying, aeromagnetic surveying, and gravimetry. Geo-
logic investigations were also made in coastal districts. It
was possible from the processing of preliminary data to expose

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Some data on...

S/169/61/000/012/001/089
D228/D305

3 main types of crustal structure: continental, oceanic, and intermediate. A schematic zoning of the study region was made from the crustal types, and transitional areas from one type to another were distinguished. The transitional region from a continental- to an oceanic-type of crust in the vicinity of the Kuriles Depression, where both the thinning-out of the supra-basaltic stratum and the rise of the surface of the basalt layer and the Mohorovicic surface are observed, is especially noted.
[Abstracter's note: Complete translation.]

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3.9300

30241

S/049/60/000/02/002/022
E131/E459

AUTHORS: Gal'perin, Ye.I. and Frolova, A.V.

TITLE: The Azimuth-Phase Correlation of Seismic Waves with Elliptical Polarization

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, Nr 2, pp 195-208 (USSR)

ABSTRACT: A method of "azimuthal correlation", based on observing in one point the waves or their individual phases as a function of the direction of the axis of maximum sensitivity of the seismograph, was described by G.A.Gamburtsev in 1952 (Ref 1). This correlation can be applied for determining the direction of the seismic waves when related to their polarization. The azimuthal seismogram of a wave can be characterized by the phase and the amplitude. The phase characteristic determines the relationship between the phase displacement (β) on the azimuth seismogram and the direction of the seismograph's axis (ω - azimuth of seismograph's axis, ψ - angle of the seismograph's inclination towards the horizon). The axis of equal phases in the azimuth seismogram is defined by the equation $\beta = \beta(\omega, \psi)$.

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S/049/60/000/02/002/022
E131/E459

The Azimuth-Phase Correlation of Seismic Waves with Elliptical Polarization

The amplitudinal (dynamic) characteristics of the waves define the relationship of the amplitude A and the direction of the axis (ω, ψ) . The equation $A = A(\omega, \psi)$ is derived for the azimuth seismogram. Both equations can be applied in order to determine the various types of waves and their parameters. The axis of equal phases for the wave elliptically polarized can be derived as Eq (1) and the equation of amplitudes is defined as Eq (2). The direction of the normal to the equiphase plane can be derived from Eq (4) and (5). Fig 1 to 6 illustrate examples of some particular cases where a collection of the equiphase planes of the polarized waves are given. The axes of equal phases are illustrated in Fig 7. The relationship between the polarization plane and the equiphase plane can be derived from Eq (6) and (7). The parameters of the waves elliptically polarized are defined by Eq (8) to (13), where

$$\begin{array}{cc} \psi_1, \theta_1 & \text{and} & \psi_2, \theta_2 \\ \psi'_1, \theta'_1 & & \psi'_2, \theta'_2 \end{array}$$

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S/049/66/000/02/002/022
E131/E459

The Azimuth-Phase Correlation of Seismic Waves with Elliptical Polarization

are the coordinates defining the direction of the axes of the pairs of seismographs. The plane of polarization can be determined also by the graphical method, as shown in Fig 8 and 9. There are 9 figures and 8 Soviet references.

ASSOCIATION: Akademiya nauk SSSR Institut fiziki Zemli
(Academy of Sciences USSR, Institute of Physics of the
Earth)

SUBMITTED: June 17, 1959

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S/011/61/000/001/001/001
A054/A133

AUTHORS: Veytsman, P.S.; Gal'perin, Ye.I.; Zverev, S.M.; Kosminskaya, I. P.; Krakshina, R.M.; Mikhota, G.G. and Tulina, Yu.V.

TITLE: Some results of studying the Earth's crust in the area of the Kuril Island arc and the adjoining areas of the Pacific Ocean based on deep seismic sounding data

PERIODICAL: Izvestiya Akademii Nauk, SSSR. Seriya geologicheskaya, no.1, 1961, 81 - 86

TEXT: In 1957-58, Soviet geologists surveyed by deep seismic sounding the geology of the region between the Asiatic continent and the Pacific, the area of the Kuril Island arc and surrounding parts of the Pacific. These latter regions are particularly interesting, because in a rather narrow (300 - 400 km) zone the Earth's crust here shows great variations which can be classified in three main groups: 1) continental type crust, consisting of an upper sedimentary and two lower: a granite and a basalt layer. This zone is 20-30 km thick, the average velocity of longitudinal waves in this zone is not more than 6 km/sec. 2) The oceanic part of the crust consists of a thin sedimentary less than 1 km thick and

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S/011/61/000/001/001/001
A054/A133

Some results of studying the Earth's crust ...

a 5 - 10 km thick basalt layer. The wave velocity in this zone (outside the sedimentary layer) is about 7 km/sec. 3) The intermediate zone has an intermediate character both as regards thickness and structure of its layers (in general the sedimentary-basalt structure prevails). The classification into these three groups was based on the time-distance curves of primary waves and the ratio of average speed v to depth h . The geological map of the surveyed area shows that the intricate alternation of these three types of crust-structure cannot be observed in the direction from the island to the ocean only but also along the entire area, from the Hokkaido Island to the Peninsula of Kamchatka. The most intricate crust-structure is found in the area between the island arc and the Kurile-Kamchatka deep trench. According to the crust-structure this area can also be divided into three parts: a) its northern part shows a continental, b) its southern part partly a continental, partly an intermediate character, while c) the central part also consists of two structures: one of an intermediate and one of an oceanic character and seems to be the continuation of the deep-water area of the Okhot Sea. In order to establish the changes in propagation velocity in the transition zone of one typical area of the crust into another, the average \bar{V} -values have been determined at a height of 7 km from the bottom. The comparison of the velocity curves with the relief of the bottom revealed a strict regularity in the relations: the oceanic

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S/011/61/000/001/001/001
A054/A133

Some results of studying the Earth's crust ...

plateau corresponds to the highest average values of \bar{V} , which drop sharply in the direction from the oceanic plateau to the tabular zone, in northern and southern direction as well, in the area of the eastern slope of the deep trench. The lower values of \bar{V} in the tabular zone are connected with thick sedimentary layers, (near Kamchatka). The areas close to the central and the southern part of the arc display high \bar{V} values and the high \bar{V} -values for the oceanic plateau show a stable character (about 7 km/sec). Between the island arc and the deep trench however, there are also extensive low-water areas. When comparing the bathymetric data referring to this area and the structure of the crust it can be established that the low-water areas of the Pacific at the northern and southern regions of the arc correspond to the continental type of the crust, whereas the deep-water areas of the central part of the island arc correspond to the intermediate type of the Earth's crust. The same regularity is also observed for the western coast of the island arc. Gravimetric data show that in regions of the continental type crust structure the anomalies of the gravity force display low values as compared with those registered for the ocean, while in the zones of intermediate crust structure the anomalies also have medium values between oceanic and continental anomalies. The boundaries between the zones of various Δg values correspond roughly to the boundaries between the zones of various crust-

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Some results of studying the Earth's crust ...

S/011/61/000/001/001/001
A054/A133

structures. The most intense volcanic activity for the past 200 years was recorded for the central part of the arc, with an intermediate crust-structure, while the highest seismic activity was observed in areas with a continental type structure of the core. In the Kuril arc remarkable and intensive recent movements have been observed, according to which the area can again be divided into three part: in the northern and southern parts a remarkable up-lift is established, whereas the central part - bordered by the Bussol' and Kruzenshtern straits has subsided. There are 4 figures and 9 Soviet-bloc references.

ASSOCIATION: Institut fiziki Zemli AN SSSR, Moskva (Institute of Geophysics, AN USSR, Moscow)

Card 4/4

22423

3.6000

S/049/61/000/002/001/012
D242/D301

AUTHORS: Aver'yanov, A. G., Veytsman, P. S., Gal'perin, Ye. I.,
Zverev, S. M., Zayonchkovskiy, M. A., Kosminskaya,
I. P., Krakshina, R. M., Mikhota, G. G., and Tulina,
Yu. V.

TITLE: Deep seismic sounding in the transitional zone between
the continent of Asia and the Pacific Ocean during
the International Geophysical Year

PERIODICAL: Akademiya nauk SSSR. Seriya geofizicheskaya.
Izvestiya, no 2, 1961, 169-184

TEXT: As part of the IGY program scientists of the Institut
fiziki zemli AN SSSR (Institute of Physics of the Earth AS USSR),
the Vsesoyuznyy nauchno-issledovatel'skiy institut geofiziki
Ministerstva geologii i okhrany nedr SSSR (All-Union Scientific-
Research of the Ministry of Geology and Mineral Resources of the
USSR) and other organizations investigated the crustal structure
of the Okhotsk Sea by means of deep seismic sounding. The area

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Deep seismic sounding...

was chosen since very little is known of the nature of the crust in such transitional zones between continents and oceans. It is separated from the Pacific by the Kurile Island Arc which is bordered by a deep ocean containing seismologically active zones with deep foci and large positive gravity anomalies. The main observations were undertaken along profiles with lengths of about 8000 km, orientated transversely to the supposed structures of the study area, as described by Ye. I. Gal'perin, A. V. Goryachev and S. M. Zverev (Ref. 1: Issledovaniye zemnoy kory v oblasti perekhoda ot Aziatskogo kontinenta k Tikhomu okeany (Investigation of the Crust in the Area of Transition between the Continent of Asia and the Pacific Ocean) Sb. XII razdel programmy MGG (seysmologiya), No. 1. Izd. AN SSSR, 1958) and by V. G. Vasil'yev et al (Ref. 2: Issledovaniye zemnoy kory v oblasti perekhoda ot Aziatskogo kontinenta k Tikhomu okeany (Investigation of the Crust in the Area of Transition between the Continent of Asia and the Pacific Ocean) Sb. "Seysmicheskiye issledovaniya v period MGG"

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D242/D301

Deep seismic sounding...

No. 4, Izd. AN SSSR, 1960). The area near Iturup Island was also investigated on a special grid. The data was collected by the method of movable explosion points with single-point recording at fixed stations; the details are given by Ye. I. Gal'perin and I. P. Kosminskaya (Ref. 3: Osobennosti metodiki glubinnogo seysmicheskogo zondirovaniya na more. (Features of the Method of Deep Seismic Sounding at Sea) Izv. AN SSSR, Ser. geofiz., No. 7, 1958). Use was also made of the results of experiments conducted by G. A. Gamburtsev (Ref. 6: O glubinnom seysmicheskom zondirovanii zemnoy kory i nekotorykh drugikh prilozheniyakh metodom vysokochuvstvitel'noy zapisi seysmicheskikh kolebaniy. (The Deep Seismic Sounding of the Crust and some other Applications by the Method of Highly Sensitive Recording of Seismic Oscillations) Izbr. tr., Izd. Akad. Nauk SSSR, 1960) and P. S. Veytsman (Ref. 7: O rezultatakh rabot po glubinnomu seysmicheskomu zondirovaniyu zemnoy kory v odnom iz gornykh rayonov Sredney Azii. (Results of the Deep Seismic Sounding of the Crust in a Mountainous District of Central

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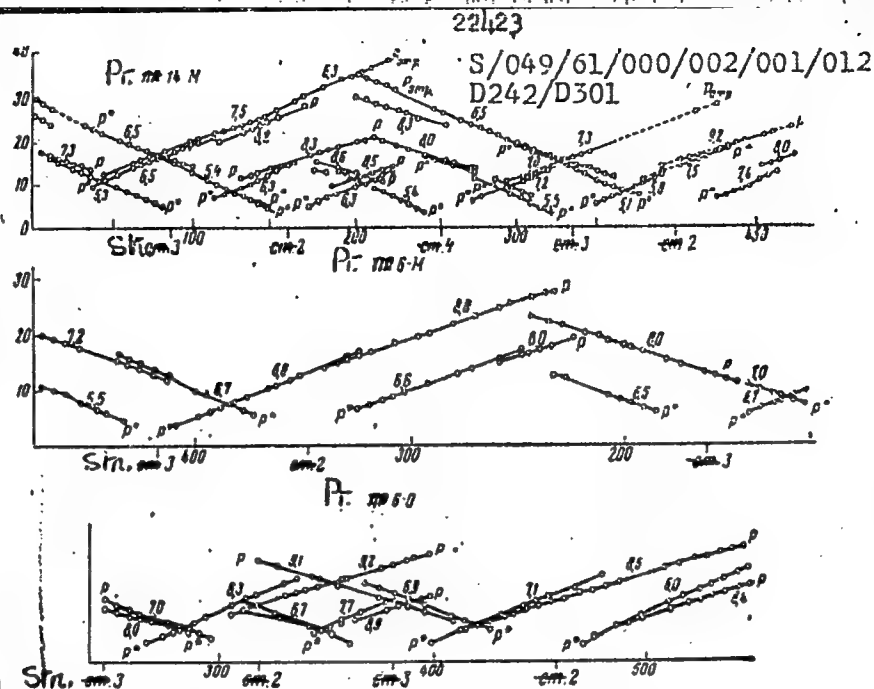
Deep seismic sounding...

Asia) Stud. Geophys. et Geodaet., No. 2, 1958) in continental areas of the Soviet Union. In contrast to foreign practice, it was possible by employing several recording stations on the line of observation to obtain the types of time-travel curves shown in Fig. 2 during a single boat journey. Wave recordings were also made on the explosion vessel. The bottom of reflections provided information on the depth of water and the structure of bottom sediments in accordance with the procedure mentioned by S. M. Zverev (Ref. 10: O stroenii osadochnoy tolshchi nekotorykh uchastkov Tikhogo okeana po dannym seysmicheskikh otrazhennykh voln (Structure of the Sediment Layer of Certain Parts of the Pacific Ocean from the Data of Reflected Seismic Waves) Izv. AN SSSR, ser. geol., No. 2, 1960). The explosions of charges weighing about 100 kg were recorded on a low-frequency seismic device with a filtration range of 0.7 - 15 hertz at distances of up to 200 - 250 km on the sea and 100 - 150 km on the ocean. The receivers consisted of hydrophones with cascade intensification.

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Deep seismic
sounding...

Fig. 1.
Examples of
hodograph
systems ob-
tained in the
Okhotsk Sea
(14-M, 6-M)
and Pacific
Ocean (6-0)



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Фиг. 2. Примеры систем годографов, полученных в Охотском море (14-М, 6-М)
и Тихом океане (6-0)

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Deep seismic sounding...

The waves were separated and correlated by recording their intensity simultaneously with the construction of the hodographs which were set out in such a way that the coordinate origin corresponded to the position of the recording station, the time of wave-arrival being plotted over the positions of the explosion sites. Despite the complexity of the recordings, especially in island and littoral areas, several types of waves related to crustal discontinuities, bottom sediments and the water layer were distinguished on the seismograms, including refracted longitudinal waves associated with boundaries in the sediment layer (P_{sed}) and the actual crust (P^0 and P^*) and with the Mohorovicic discontinuity at the base of the crust. Waves of the first type have speeds of 5 km/sec and were observed near the Kuriles and on most sea profiles. The velocities of the P^0 and P^* waves mainly recorded in island areas and near Kamchatka are 6 and 6.5 - 7 km/sec respectively. The leading P waves refracted from the Mohorovicic discontinuity

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Deep seismic sounding...

travel at speeds of about 8.5 km/sec. Waves (P_R) reflected from the Mohorovicic and other discontinuities were also noted in addition to the refracted waves, although it was only possible to distinguish them with any clarity in certain regions - mainly the northern and central parts of the Okhotsk Sea, where their amplitude is greater than that of the other wave-types. Analysis of the hodographs discloses the existence of three main wave-types defined by differences in the arrival and transit time of the waves, by the areas where they were recorded and by the presence or absence of the P^0 and P^* groups (Fig. 9). By plotting the values for the relationship of the mean velocity v to the depth h , three types of velocity curves corresponding to continental-, intermediate- and oceanic-type hodographs were also obtained. Continental-type hodographs are characteristic of large areas in the northern and central parts of the Okhotsk Sea and in the northern Kuriles, where work by P. S. Veytsman et al (Ref. 11: Nekotoryye rezul'taty izucheniya stroyeniya zemnoy kory v oblasti

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S/049/61/000/002/001/012
D242/D301

Deep seismic sounding...

Kuril'skoy ostrovnoy dugi i privileyushchikh uchastkov Tikhogo okeana podannym glubinnogo seysmicheskogo zondirovaniya (Some Results of the Study of Crustal Structure in the Kurile Island Arc and Adjoining Parts of the Pacific Ocean from the Data of Deep Seismic Sounding) Izv. AN SSSR, ser. geol., No. 1, 1961) has already indicated that the crust is of the continental type. In the continental-type hodographs the arrival times of the P₀, P* and P waves are at a maximum, the transit time of the P waves being 18 - 19 sec. There are two forms of hodograph; one represents a three-layer crust (sediments - 'granite' - 'basalt') for the region near Kamchatka and Sakhalin, while the other corresponds to a granite crust (with local basalt layers) in the north of the Okhotsk Sea. According to the velocity-depth curves the continental-type crust, whose thickness throughout the study area may vary from 20 to 30 km, includes thick or thin sedimentary layers. Oceanic-type hodographs cover areas approximately outlined by the 5 km isobath. The arrival time of the P* and P waves

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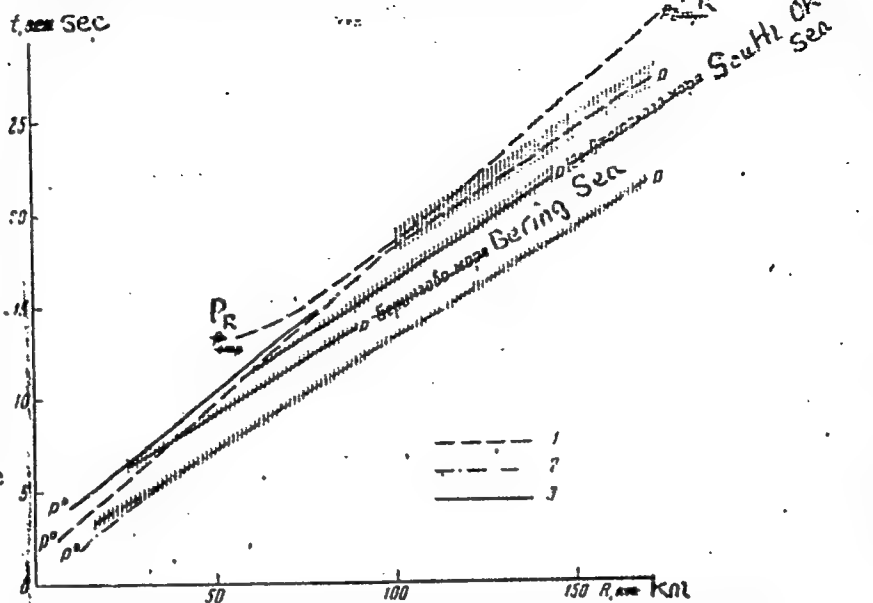
Deep seismic sounding...

22423

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D242/D301

Fig. 9.
Principal
hodograph
types.
1-continental
2-oceanic
3-intermediate
striations
denote areas
where there
are different
types of hodo-
graph waves;
Type 3 charac-
terizes hodo-
graphs for the
Bering and
Okhotsk Seas

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D242/D301

Deep seismic sounding...

is at a minimum and the transit time for the latter waves is ≤ 14 sec. The presence of a thin basalt crust with a thickness of about 5 - 12 km may be inferred from the observational data. The intermediate-type hodographs are representative of the southern part of the Okhotsk Sea and the neighborhood of the Komandorskiye Islands. They are distinguished by the existence of P* and P waves and by the large area in which waves of the first type were recorded; the transit time of the P waves is 15 - 17 sec. The velocity-depth curves resemble those for the continental-type crust in abyssal parts of the Okhotsk Sea, where the sediment thickness appears to be considerable, and those for the oceanic-type crust in the Bering Sea. The authors conclude by stating that a composite interpretation of the data of deep seismic sounding and of gravimetric, aeromagnetic and geologic observations in this region will be made subsequently which may possibly expose the patterns of development of crustal structure and also clarify the conditions and sequence of transition from one type

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Deep seismic sounding...

of crustal structure to another. In addition, they emphasize the desirability of comparing their data with those from other global zones. There are 13 figures and 12 references: 10 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: R. W. Reitt - Seismic-refraction studies of the Pacific Ocean Basin, p. 1. Crustal thickness of the central equatorial Pacific, Bull. Geol. Soc. Amer., 67, No. 12, 1956; M. Talwani, G. H. Sutton and J. L. Worzel - A crustal section across the Puerto Rico Trench, J. Geophys. Res., 64, No. 10, 1959.

ASSOCIATION: Akademiya nauk SSSR, institut fiziki zemli (Institute of Physics of the Earth, AS USSR)

SUBMITTED: July 24, 1960

Card 11/11

S/049/61/000/006/001/014
D239/D306

AUTHORS: Gal'perin, Ye. I. and Frolova, A.V.

TITLE: Three-component seismic observations in boreholes. I.

PERIODICAL: Akademiya nauk. Izvestiya. Seriya geofizicheskaya, 1961,
no. 6, 793-809

TEXT: Two extensions of well-shooting technique are discussed and supported by field results obtained in 1959-60 by the Institut fiziki Zemli AN SSSR (Institute of Physics of the Earth of the AS USSR). These extensions are (a) The use of correlation principles to follow arrivals out to the end of the traces, obtained in ordinary reflexion shooting by adding three-component information from a neighboring borehole shoot and (b) the use of polarization data to assist in the qualitative evaluation of strata. The necessary elementary theory for the case of a borehole penetrating a single horizon is developed and the case is illustrated by field data on arrivals P, PP, PPP and PPS from two shots about 200 m from a single borehole. A clear figure is drawn of the data

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S/049/61/000/006/001/014
D239/D306

Three-component seismic ...

from both the vertical profile and the horizontal array to assist the explanation which is detailed. Fieldwork was carried out in Cisarc pathia (Stanislavskiy oblast) where there is a sharp horizon between the gypsoanhydrite layer and the overlying argillaceous sandstone. The observations were made with a seismic apparatus type CC-26-51-D (SS 26-51-D) using seismometers type CI-16M (SP-16M). The X-component had a resonance at 20 c/s and the Z-component at 50 c/s. A full description of the results and their analysis is given, illustrated by five photographs of seismograms. The net result was the detection of a slope and its strike at the interface. T. Kulichikhina, F. Vinogradov, P. Yudin and L. Khudobina are mentioned for their contributions. There are 1 table, 12 figures and 23 references: 17 Soviet-bloc and 6 non-Soviet-bloc. The 4 most recent references to English-language publications read as follows: F.J. McDonald, F.A. Angone, Attenuation of the shear and compressional waves in pierre shale. Geophys. 23, 1958; E.M. Riggs, Seismic wave types in a borehole. Geophys. 20, 1955. F.K. Levin, R.D. Lynn, Deep hole geophone studies. Geophys. 23, 1958. F. Collins, ✓

Card 2 3

The component: Seismology

S. 049 61 000 000 001 011
D259 D306

G.G. 100 Seismic wave attenuation characteristics from pulse experiments. Geophys. 21, 1956.

ASSOCIATION Akademiyu nauk SSSR Institut Fizik Zemli (Academy of Sciences USSR, Institute of Physics of the Earth)

SUBMITTED September 15, 1960

Card 3 3

GAL'PERIN, Ye. I.; FROLOVA, A.V.

Three-component seismic observations in boreholes. Report No. 2.
Izv. AN SSSR. Ser. geofiz. no.7:979-993 J1 '61. (MIRA 14:6)

1..Akademiya nauk SSSR, Institut fiziki Zemli.
(Seismic prospecting)

GAL'PERIN, Ye.I.; TURCHENKOV, V.I.

Ring phase detector for high output voltages. Priborostroenie
no.11:21-22 N '62. (MIRA 15:12)
(Voltage regulators)

GAL'PERIN, Ye.I.

Studying the direction of the vector of displacement in seismic waves during observations in boreholes. Izv. AN SSSR. Ser.geofiz. no.2:278-292 F '63. (MIRA 16:3)

1. Institut fiziki Zemli AN SSSR.

(Seismology)

GAL'PERIN, Ye. I.

Using the directions of the displacements in the initial waves,
as observed in boreholes, to determine the bedding factors of
the refraction discontinuity. Izv. AN SSSR. Ser. geofiz. no. 4:
513-524 Ap '63. (MIRA 16:4)

1. Institut fiziki Zemli AN SSSR.
(Seismology—Graphic methods)

GAL'PERIN, Ye.I.; ZAYONCHKOVSKIY, M.A.

Methodology and technique of deep-sea seismic prospecting
using submarines. Izv. AN SSSR. Ser. geofiz. no.12:1833-1836
D '63. (MIRA 17:1)

1. Institut fiziki Zemli AN SSSR.

GAL'PERIN, Ye.I., otv. red.; KOSHINSKAYA, I.P., otv. red.

[Crustal structure in the transitional area from the
Asiatic continent to the Pacific Ocean] Stroenie zemnoi
kory v oblasti perekhoda ot Aziatskogo kontinenta k
Tikhomu okeanu. Moskva, Izd-vo "Nauka," 1964. 307 p.
(MIRA 17:6)

1. Akademiya nauk SSSR. Institut fiziki Zemli.

ACCESSION NR: AP4033019

S/0049/64/000/004/0456/0474

AUTHOR: Gal'perin, Ye. I.

TITLE: Detailed study of a velocity model for the upper part of a section with weak velocity differentiation

SOURCE: AN SSSR. *Izvestiya. Seriya geofizicheskaya*, no. 4, 1964, 456-474

TOPIC TAGS: velocity model, seismic model, head wave, refracted wave, vertical profiling

ABSTRACT: The ordinary method used in a drill hole (measuring velocities along the shaft of the hole by recording first-arrival times) does not always permit the construction of a velocity model of a medium that corresponds to the basic features of the observed wave picture. Through a combination of vertical and horizontal profiling and a study of the displacement directions the different kinds of head, refracted, and reflected waves in successive parts of the record may be distinguished and traced, opening up the possibility of using the dominant wave in the actual medium (according to amplitude) to construct the seismic model. The best systems of observation for constructing a proper velocity model of a medium are

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ACCESSION NR: AP4033019

correlation systems in vertical planes. This technique has permitted the construction of a model with weakly differentiated velocities in the medium. For technical reasons, systems of observations in vertical planes have been used previously for constructing velocity models of the upper parts of sections, chiefly in connection with the study of wave noise. Under these conditions only direct head and re-fracted waves could be used (their first arrivals on the record). With more thorough studies, the number of usable waves is increasing, and more effective use of the possibilities of the system is being realized. Orig. art. has: 12 figures.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli (Academy of Sciences SSSR, Institute of Physics of the Earth)

SUBMITTED: 08May63

DATE ACQ: 13May64

ENCL: 00

SUB CODE: ES

NO REF SOV: 013

OTHER: 000

Card 2/2

GAL'PERIN, Ye.I.

Influence of the upper surface and the upper part of a cross section
on the character and structure of seismograms. Vop.din.teor.raspr.
seism.voln no.7:201-214 '64. (MIRA 17:12)

~~KEYTSMAN, P.S.~~
GALPERIN, YE.I.

L 31816-65 EWT(1)/EWA(h) Pub GW
AM4045250 BOOK EXPLOITATION S/

Akademiya nauk SSSR. Institut fiziki zemli im. O. Yu. Shvidts

Structure of the earth's crust in the zone of transition from the continent of Asia to the Pacific Ocean (Stroyeniye zernoy kory v oblasti perekhoda ot Aziatskogo kontinenta k Tikhomu Okeanu) Moscow, Izd-vo "Nauka", 1964. 307 p. illus., biblio., foldin charts (in portfolio). Errata slip inserted. 1200 copies printed. Responsible editors: Ye. I. Gal'perin, I. P. Kosminskaya; Editor of the publishing house: S. I. Masarskiy; Technical editors: Ye V. Makuni, S. G. Tikhomirova

TOPIC TAGS: area seismic sounding, earth crust, geophysics, international geophysical year, ocean, seismic wave

PURPOSE AND COVERAGE: This monograph is devoted to studies by the method of deep seismic sounding (GSS) in the zone of transition from the Asiatic continent to the Pacific Ocean (Kamchatka, the Kurile peninsula, Bering Sea, etc.) during the International Geophysical Year (IGY). The material is presented as a collection of individual chapters, although all are devoted to a single problem and are

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essentially parts of one book. The authors express their gratitude to Professor V. V. Fodymskiy, Chairman of the working subgroup of the Sovetskiy Natsional'nyy Komitet, initiator and organizer of complex geophysical research, and also to Corresponding Member of the Academy of Sciences of the USSR V. V. Belousov. The concluding chapter was prepared by A. G. Aver'yanov, P. S. Veytsman, Ye. I. Gal'perin, S. M. Zverev, and I. P. Kosinskaya.

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- Ch. 5. Results of studying a sedimentary stratum in the Sea of Okhotsk and the Kurile-Kamchatka Zone of the Pacific Ocean (S. M. Zverev) - - 90
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- Ch. 9. The southern and central parts of the Pre-Kurile Zone in the Pacific Ocean (Yu. V. Tulina, V. I. Mironova) - - 199
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Card 3/A3

I 21130-66 EWT(1)/EWA(h) CN

ACC NR: AP6011952

SOURCE CODE: UR/0387/65/000/012/0001/0012

AUTHOR: Gal'perin, Ye. I.

ORG: Institute of Physics of the Earth, AN SSSR (Institut fiziki Zemli AN SSSR)

TITLE: Study of multiply reflected waves in vertical seismic profiling

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 12, 1965, 1-12

TOPIC TAGS: shock wave reflection, seismic wave, stratigraphy, seismology

ABSTRACT: On a vertical profile, in contrast to a horizontal profile, multiply reflected waves differ sharply from singly reflected waves and in particular there is a difference in the regions where they occur. Vertical seismic profiling affords new possibilities for study of multiple waves: determination of their nature, paths, relationship to stratigraphy, conditions of formation, etc. In this respect vertical seismic sounding has considerably greater possibilities than horizontal profiling. In order to determine the nature of waves recorded at the surface and detection of singly reflected waves among a large number of multiply reflected waves it is of particular importance to combine observations by the horizontal and vertical profiling methods. The use of a multipoint probe with independent spring devices has considerably improved the possibility of correlating waves on the vertical profile. On the seismograms for a vertical profile, the last part of which is free of wave interference, it has been found that there can be phase correlation not

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ACC NR: AP6011952

only of the dominant waves, but also of waves with a relatively small amplitude. The use of the methods of directional reception considerably improve the possibilities of correlating waves on a vertical profile. Even at relatively great depth -- 2-2.2 km -- there is a strong influence of the surface and the discontinuities in the upper part of the cross section on the wave field recorded at inner points of the medium. The overwhelming part of the energy on records obtained at these depths is related to multiple waves which are reflected from the surface or discontinuities in the upper part of the cross section and are propagated downward in the medium. The next objective in the study of multiple waves in vertical profiling is the study of the dynamics of multiple waves and the properties of the media in which they arise and are propagated. The results already obtained and those expected in the future justify the broadening of investigations in this direction. It can be speculated that with a further development of the methods of vertical seismic profiling the possibilities of experimental study of seismic waves in real media, and especially multiple waves, can be so decisive that it may be desirable and economically advantageous in areas where many seismic investigations are being made to have special drilling of a borehole for vertical seismic profiling purposes. Orig. art. has: 8 figures and 2 formulas. [JPRS]

SUB CODE: 08, 20 / SUBM DATE: 11Jun64 / ORIG REF: 017

Card 2/2 *da*

L 29833-66 EWT(1) GW

ACC NR: AP6005550

SOURCE CODE: UR/0030/66/000/001/0055/0060

AUTHOR: Gal'perin, Ye. I. (Candidate of physico-mathematical sciences) 58
B

ORG: Institute of the Physics of the Earth im. O. Yu. Shmidt, AN SSSR (Institut Fiziki Zemli)

TITLE: Investigation of seismic waves in real media

SOURCE: AN SSSR. Vestnik, no. 1, 1966, 55-60

TOPIC TAGS: seismology, seismic profiling, seismic wave, seismic modeling, seismography

ABSTRACT: This paper presents a brief historical review and a summary of the present status of Soviet studies on seismic wave propagation in real media. The Institute of Physics of the Earth im. O. Yu. Shmidt of the Academy of Sciences USSR began work in 1959 to improve methods for the experimental investigation of seismic waves in real media. The main task was to make the transition from investigation of wave pictures which already had been formed to investigation of the actual processes of the formation and propagation of seismic waves. This again required changing from surface observations to observations made within the earth's crust (borehole multichannel registration of waves with shot points located at various distances from the mouth of the borehole). The importance of combining observations carried out within the medium (vertical profiling) with surface obser-

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ACC NR: AP6005550

ations (horizontal profiling) is emphasized. The author points out the need for further investigations of the correlation method of refracted waves as one of the most important methods of carrying out regional geophysical studies. He also emphasized the need to attempt to improve on Petrashen's theoretical treatment of a simple model to more accurately reflect the propagation and behavior of seismic waves in more complex models. Orig. art. has: 4 figures. [ER]

SUB CODE: 08/ SUBM DATE: none

Card 2/2 *IV*

ACC NR: AP6032422

SOURCE CODE: UR/0387/66/000/009/0093/0104

AUTHOR: Gal'perin, Ye. I.; Frolova, A. V.

ORG: Institute of Earth Physics, AN SSSR (Institut fiziki zemli AN SSSR)

TITLE: Investigation of exchanged waves by the seismic vertical profiling method

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 9, 1966, 93-104

TOPIC TAGS: seismic wave, stratigraphy, transverse wave

ABSTRACT: At present, the main difficulty in developing this method lies in the correct interpretation of the composition of the ground and in the separation of individual waves. Among other difficulties, the great number of possible wave types and the wide range of the velocity ratios of the longitudinal to transverse waves should be mentioned. The difficulties mount even in the simplest of seismological cases. In complex cases, the problem is hardly soluble. The method of vertical profiling affords the following: 1) determination of the nature of waves; 2) identification of waves with the corresponding stratigraphic units; 3) identification of waves as longitudinal or transverse--within limits of the stratigraphic unit; 4) construction of the simplified model; and 5) evaluation of the wave parameters. The exchanged waves are most pronounced when propagating upward. The improvements in the method should be along the

UDC: 550.834

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ACC NR: AP6032422

lines of correlation of waves throughout the entire vertical profile. Orig. art. has:
7 figures, 2 formulas.

SUB CODE: 08/ SUBM DATE: 08May64/ ORIG REF: 020

Card 2/2

ACC NR: ~~11~~ DW(1) OW
AP6035594

SOURCE CODE: UR/0387/66/000/010/0009/0024

AUTHOR: Gal'perin, Ye. I.

ORG: Institute of Physics of the Earth, Academy of Sciences SSSR (Institut fiziki Zemli, Akademiya nauk SSSR) 203

TITLE: Intensity of head waves and reflected waves incident at angles exceeding the critical angle, based on vertical seismic-profiling data

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 10, 1966, 9-24

TOPIC TAGS: seismic profiling, wave propagation, seismic wave, vertical seismic profiling, heat wave, reflected wave

ABSTRACT: The intensity of head waves and reflected waves incident at angles exceeding the critical angle is investigated inside the medium by vertical seismic profiling. These investigations are a continuation of those initiated by Ye. I. Gal'perin and A. V. Frolova [Izv. AN SSSR. Ser. geofiz., no. 9, 1963]. The advantage of observations made inside the medium as compared to ground observations in investigating head waves is that the waves are recorded in different regions in horizontal and vertical profiles. In horizontal profiling the first head-wave arrivals can only be recorded at relatively great distances, making it difficult to analyze them. In vertical profiling the first head-wave arrivals are tracked directly from the point of origin and from the refracting boundary, making possible the

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UDC: 550.834

L 29264-66 ENT(1)/ENT(m)/FCC/ENP(t)/ETI IJP(c) GW/WW/JD
 ACC NR: AP6019297 SOURCE CODE: UR/0203/65/005/004/0728/0734

AUTHOR: Gal'perin, Yu. I.; Sobel'man, I. I. 46
E

ORG: Institute of Physics of the Atmosphere, AN SSSR (Institut fiziki atmosfery AN SSSR); Physics Institute im. Lebedev, AN SSSR (Fizicheskii institut AN SSSR)

TITLE: Possible role of metastable states of neon and argon in processes of post-luminescence of auroras 27

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 4, 1965, 728-734

TOPIC TAGS: neon, argon, aurora

ABSTRACT: A study has been made of the role of the processes of collisions of O₂ molecules with Ne and Ar atoms in metastable states, leading to dissociation of the O₂ molecule with the formation of excited oxygen atoms. The oxygen lines λ 8446 and 7774 Å are emitted at the time of collisions with neon; the lines λ 5577 and 6300 Å are emitted at the time of collisions with argon. The duration of post-luminescence at heights ~200 km can attain several seconds. Orig. art. has: 17 formulas and 1 table. [JPRS]

SUB CODE: 04 / SUM DATE: 12Oct64 / ORIG REF: 008 / OTH REF: 009

Card 1/1 *CC*

UDC: 550.388.8

KLEVITS, V.Ye., kandidat meditsinskikh nauk; GAL'PERIN. YE.I. student
VI kursa.

Immediate and late results of treating chronic osteomyelitis
by continuous intraosseal penicillin injections. Khirurgia no.6:
71-75 Je '55. (MLRA 8:10)

1. Iz kafedry fakul'tetskoy khirurgii imeni N.M.Burdenko (sav.-
zasluzhennyy deyatel' nauki prof. N.M.Yelanskiy) i Moskovskogo
ordena Lenina meditsinskogo instituta.

(OSTEOMYELITIS, ther.

penicillin, intra-ossal admin.)

(PENICILLIN, ther.use

osteomyelitis, intra-ossal admin.)

GALPERIN, V. I.

EXCERPTA MEDICA Sec.18 Vol.1/9 Cardiovascular Sept 57

2687. HALPERIN E. I. *Determination of portal blood pressure by spleen puncture*
(Russian text) Khirurgija 1957, 4 (109—114) Tables 3

On account of the development of the operative treatment of cirrhosis of the liver it is of great importance to measure the portal pressure before the operation. Estimation of portal pressure gives the opportunity of early correct diagnosis and determination of expediency of surgical intervention. Taken into consideration the fact that the medullary sinus of the spleen is connected with the veins of the portal system in the spleen, it was suggested that the pressure measured in the spleen must show the correct value of the portal pressure. In order to check this statement 22 measurements of the venous pressure were taken in dogs and 6 in rabbits. Simultaneously the measurements of the pressure in the portal vein were taken. The results were identical. The pressure in the spleen was from 100 to 220 (average 147) mm. of water column. The portal pressure was from 102 to 220 (average 144) mm. of the water column. The same evidence was obtained on measuring the pressure in dogs. Later this method of measurement of the pressure by puncture of the spleen was tested in 9 patients who suffered from cirrhosis of the liver. There were no complications noted either in the patients or in laboratory animals. (XVIII, 9)

*Moscow Regional Sci Res Inst. Surg. Div.
in collaboration with*

EXCERPTA MEDICA Sec 9 Vol 13/7 Surgery July 59

the
18)

4014. PORTACAVAL END-TO-SIDE ANASTOMOSIS WITH THE AID OF DONETSKY'S RINGS (Russian text) - Galperin E. I. - EKSPER. KHIR. 1958, 4 (40-44) Tables 1

A portacaval end-to-side anastomosis was performed in 15 dogs with the aid of Donetsky's metal ring. The technique of the procedure is described. Suture of vessels with the aid of this method never caused any great technical difficulties. There was no haemorrhage. Vasograms taken from 17 days to 2.5 months after the operation showed the vascular anastomoses to be fully patent. One dog died immediately after the operation from air embolism. Two dogs died, one after 17 days, the other after 2 months, with symptoms of meat poisoning. All animals

Experimental Lab, Moscow City Sci Res Inst First Aid in NV Sklifosavskiy

GAL'PERIN, Ye.I.

Induction of liver cirrhosis and ascites in experiment. Eksper.
khir. 5 no.1:46-49 Ja-F '60. (MIRA 13:12)
(LIVER—CIRRHOSIS) (ASCITES)

PETROV, B.A., prof.; GAL'PERIN, Ye.I., kand.med.nauk

Diagnosis and treatment of nonulcerative gastrointestinal hemorrhage. Vest.khir. no.10:87-92 '61. (MIRA 14:10)

1. Iz Moskovskogo gorodskogo ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skogo instituta skoroy pomoshchi im. N.V. Sklifosovskogo (dir. - zasluzh. vrach USSR M.M. Tarasov).
(HEMORRHAGE) (DIGESTIVE ORGANS—DISEASES)

GAL'PERIN, E. I.

A manual on specification requirements for metal-working machinery. Kiev. Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1949. 119 p. (50- 39423)

TJ1185.G25

GAL'PERIN, E. I.

Naladka zuboreznykh stankov.

Moskva, Mashgiz, 1951. 172 p.

(Setting up gear-cutting machines.)

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

GAL'PERIN, Ye.I.

KOROLEV, F.K., dotsent, kandidat tekhnicheskikh nauk; BONDAR', M.P.,
kandidat tekhnicheskikh nauk, redaktor; GAL'PERIN, Ye.I., inzhener,
retsenzent; KHAYMOVICH, Ye.M., professor, doktor tekhnicheskikh
nauk, retsenzent; NESTERENKO, D.M., tekhnicheskiiy redaktor

[Calculations for transverse planing machines] Raschet poperechno-
strogal'nykh stankov. Kiev, Gos. nauchno-tekhn. izd-vo mashino-
stroit. lit-ry, 1952. 100 p. [Microfilm] (MLRA 7:10)
(Planing machines)

SIDORENKO, A.K.; KARTSEV, A.K.; SHATSKIY, Ye.S.; GAL'PERIN, Ye.I.,
otvetstvennyy redaktor; LEUTA, V.I., vedushchiy redaktor; RU-
DENSKIY, Ya.V., tekhnicheskiiy redaktor.

[Manufacture of cog and worm gear] Izgotovlenie zubchatykh i
cherviachnykh peredach. Kiev, Gos. nauchno-tekhn. izd-vo ma-
shinostroitel'noi i sudostroit. lit-ry, 1954. 117 p.
(Gearing) (MLRA 8:1)

KARTSEV, A.K.; KARPOV, V.F., inzhener, redaktor; GAL'PERIN, Ye.I., inzhener, redaktor; LEUTA, V.I., inzhener, redaktor; RUDENSKIY, Ya.V., tekhnicheskiiy redaktor.

[Production of worm gears; from the practice of the Novo-Kramatorsk machine shop] Proizvodstvo globoidnykh peredach. Pod red. V.F.Karpova. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, Ukrainskoe otd-nie, 1954. 134 p.
(Gearing, Worm) (MLR 8:1)

FABER, Aleksandr Moyseyevich; GAL'PERIN, Ye.I., inzhener, retsenzent;
LYAPUNOV, M.A., kandidat tekhnicheskikh nauk, dotsent, retsenzent;
GLUVCHINSKIY, Ye.V., kandidat tekhnicheskikh nauk, redaktor;
LEUTA, V.I., inzhener, redaktor izdatel'stva; RUDEMSKIY, Ye.V.,
tekhnicheskiy redaktor

[Engineering precision of gear cutting machines and means of
improving it] Tekhnologicheskaya tochnost' suboreznykh stankov i
sposoby ee povysheniya. Kiev, Gos.nauchno-tekhn.izd-vo mashinostrit.
lit-ry, 1957. 190 p. (MIRA 10:10)
(Gear-cutting machines)

PHASE I BOOK EXPLOITATION SOV/4602

Gal'perin, Yevgeniy Iovelevich

Naladka zuboreznykh stankov (Setting-Up of Gear-Cutting Machines)
2d ed., rev. and enl. Moscow, Mashgiz, 1960. 214 p. 10,000
copies printed.

Reviewer: G. A. Preys, Candidate of Technical Sciences; Ed.:
N. P. Onishchenko, Engineer; Chief Ed. (Southern Department,
Mashgiz): V. K. Serdyuk, Engineer.

PURPOSE: This book is intended for skilled workers and foremen
working in machining shops.

COVERAGE: The book contains basic data on setting-up Soviet-
made gear-milling and gear-shaping machines for machining
spur and worm gears. Essential information is given on
gears and on cutting methods with various tools on milling,
tooth-milling, and tooth-shaping machines. No personalities
are mentioned. There are 20 references, all Soviet.

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Setting-Up of Gear-Cutting Machines

SOV/4602

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12-19-60

REZANOV, I.A.; RASTVOROVA, V.A.; LEONOV, N.N.; Prinimali uchastiye:
ANDREY.V, S.S.; GAL'PERIN, Ye.I.; DOMABEDOV, A.F.; KATS, A.Z.;
KOSMINSKAYA, I.P.; LEONOV, H.N.; MASARSKIY, S.I.; MEDVEDEV,
S.V.; PETRUSHEVSKIY, B.A.; PUCHKOV, S.V.; RASTVOROVA, V.A.;
REZANOV, I.A.; SAVARENSKIY, Ye.F.; KHARIN, D.A.; Red karty:
GAMBURTSEV, G.A.

Establishment of detailed seismic regions as exemplified by
a region of western Turkmenistan. Biul. Sov. poseism. no.8:
131-141 '60. (MIRA 13:10)

1. Institut fiziki Zemli AN SSSR.
(Turkmenistan--Seismology)

AKSENOVICH, G.I.; ARONOV, L.Ye.; GAGEL'GANTS, A.A.; GAL'PERIN, Ye.I.;
ZAYONCHKOVSKIY, M.A.; KOSMINSKAYA, I.P.; KRAKSHINA, R.M.;
VERES, L.F., red. izd-va; TIKHOMIROVA, S.G., tekhn. red.

[Deep seismic sounding in the central part of the Caspian Sea]
Glubinnoe seismicheskoe zondirovanie v tsentral'noi chasti Kas-
piiskogo moria. [By] G.I.Aksenovich i dr. Moskva, Izd-vo Akad.
nauk SSSR, 1962. 150 p. (MIRA 15:8)
(Caspian Sea--Earth--Surface) (Seismology)